

ABSTRACT

A method and apparatus for bit rate allocation, or statistical multiplexing, in a multi-channel video data encoder. A pre-processor in each channel 5 determines a bit rate need prior to compression and encoding. A control processes the bit rate need in each channel to arrive at an allocated bit rate for each channel. The video data is then compressed and encoded according to the allocated bit rate. The 10 bit rate demand accounts for various characteristics of the current picture data in each channel, including spatial activity, temporal activity, image size, frame rate, scene change, brightness, flash, fade, and horizontal pixel resolution. The system 15 also biases the bit rate allocation according to inter-frame distance, whether the average spatial activity level is below a lower threshold, whether the inter-frame distance is above an upper threshold or below a lower threshold, whether the quantization 20 of previous frames is above an upper threshold, the length of the Group of Pictures (GOP), and a user-selectable priority factor. The system also allocates any surplus bit rate among the channels to avoid having unused bandwidth.